

enlighten the path from information to intelligence

**Mobile and Wearables**

Vital sign monitoring  
Display and device management  
Facial recognition



**Aware**

Wide Spectrum Sensing  
new intelligence with new spectrum

- Multi-spectrum All-in-one Bio-sensor
- Lowest standby power consumption in the industry
- Ultra-sensitive vital sign and skin detection with programmable function for digital health applications
- All-in-one compact design with cost advantage compared to conventional discrete designs

**Healthcare**

Hyperspectral imaging diagnosis  
Flexible all optical fiber



**Explore**

Wide Spectrum Imaging  
new intelligence with new dimensions

- Wide Spectrum 3D ToF Imaging Solution**
- Feature ultra-sensitive and high-bandwidth photonic technology with energy efficient and scalable SWIR SoC architecture
  - Deliver high performance with customizable resolutions, compact design, and low power consumption for 3D imaging solutions
  - Suitable for consumer, automotive and industrial applications

**Dual-mode 3D Camera**

- Highly integrated Camera design to include wide spectrum imaging for both 940nm (NIR) and 1380nm (SWIR) and RGB with USB 3.0 output
- Unique SWIR-NIR-RGB 2D/3D fusion algorithm to deliver high resolution, depth accuracy with high frame rate
- Support machine vision, human-machine interaction, food inspection, facial-recognition payment, and multiple metaverse related applications

**Commerce**

POS service  
Payment authentication



**Agriculture**

Food inspection system



**Metaverse**

Wide-spectrum surrounding reproduction  
Gesture recognition  
Light-speed media delivery  
Eye tracking



**Industrial**

Machine vision  
Surveillance system  
Automated robotics



**Automotive**

LiDAR  
DMS / OMS  
In-car infotainment



**Entertainment**

Video, Media  
8K TVs, 4K gaming



**Communication**

5G, Datacenter  
In-vehicle communication network



**CMOS SWIR (Shortwave Infrared)**  
SWIR sensing is currently based on GaAs or InP substrates and other III-V compound semiconductor, resulting in high cost especially with growing demand for larger array size, and difficulty to be integrated with mainstream CMOS-based circuitry.  
Artilux brings the best of both CMOS + SWIR based on our years-in-the-making revolutionary GeSi technology for digital health, 3D sensing, autonomous drive, multi-spectral sensing and metaverse.

**Expand beyond legacy visible/NIR sensing**  
Superior eye safety  
10x-10,000x safer for short-to-long range detection  
Minimum sunlight interface  
Achieving consistent indoor-outdoor performance across distances  
Multi-spectral sensing & material characterization  
Covering biometric sensing, skin detection, moisture detection, food inspection, sorting, and all weather sensing (e.g., fog see-through, etc.)

**Artilux GeSi Technology**  
• Overcoming decades of technology bottleneck since 1947, low signal to noise ratio - to bring Ge back to the spot light.  
• Compared to the legacy SiGe technology which was used for communication, Artilux GeSi technology can be used for communication, sensing and imaging.  
• With CMOS economic of scale and III-V SWIR sensing capability, it delivers new generation of products for digital health, 3D sensing, autonomous drive, multi-spectral sensing and metaverse.  
• Recognized by premier academia and industry with 250+ granted patents worldwide.

**Legacy SiGe technology**  
Since then, Ge was predominately used in SiGe, as an alloy containing a small portion of Ge in Si matrix for specialized applications such as SiGe HBT (heterojunction bipolar transistor) in BiCMOS (bipolar CMOS) transistors, or source and drain strain engineering for advanced CMOS transistors.

**Ge (Germanium)**  
Adopted in the first solid-state transistor in 1947 (Winning Nobel Prize in 1956), but was soon replaced by Silicon due to manufacturability and low signal to noise ratio.

**Connect**

Optical Communication  
ultra-high speed fiber communication for all

- CMOS-based optical HDMI / DP / USB IC solutions
- Leading all-optical solution compatible to HDMI 2.1/2.0/1.4 and DP1.4/2.0 standards with eARC/ARC support
- Supporting ultra HD resolution up to 8K@60Hz or 4K@150Hz
- Ultra-high speed, compact and light-weight design with up to 300m with best compatibility across devices

**Foresee**

Wide Spectrum Imaging  
affordable safety for autonomous mobility

- CMOS SWIR LiDAR Solution for Automotive**
- The only CMOS based SWIR 2D/ 3D imaging product in the industry that can meet the comprehensive criteria for assistive, semi-autonomous, and full-autonomous driving.
  - Proprietary ultra-sensitive and high bandwidth GeSi technology with integrated optics and circuits to enable on-chip DSP (Digital Signal Processor) or CNN (Convolutional Neural Network) processing with lower power, faster speed, and smaller form-factor
  - Established 12" CMOS process for scalability and mass-production readiness at a much more affordable price compared to legacy InGaAs/InP technology